

Uncovering the Role of OVOL1 in Placental Stem Cell Differentiation Using *Saccharomyces cerevisiae*

OVOL1 is a conserved transcription factor involved in regulating cytotrophoblast differentiation in the placenta. Our objective for this study is to use *Saccharomyces cerevisiae* to uncover the role of OVOL1 in placental stem cell differentiation and proliferation. Previous research suggests that OVOL1 regulates cytotrophoblast progenitor state by regulating genome acetylation. Therefore, our study aims to determine how OVOL1 effect yeast growth and the yeast acetylome, and to use the yeast model to determine downstream targets of OVOL1. In order to understand the role of OVOL1, we will develop a yeast model and employ growth assays to assess growth defects and mass spectroscopy to assess protein acetylation. We will also identify genetic targets of OVOL1 by performing a genome-wide screen. Lastly, the interaction of OVOL1 with other proteins involved in gene repression will be analyzed using co-immunoprecipitation, and chromatin immunoprecipitation. Our results indicate that the presence of OVOL1 confers a growth defect upon yeast cells, and this defect is further exasperated when histone acetyltransferases (HAT) are deleted out of the yeast genome. However, when histone deacetylases (HDAC) are deleted in the presence of OVOL1, normal growth of yeast cells are restored. Our results indicate that there is an interaction between OVOL1 proteins and HDAC, and this could regulate growth and differentiation in the cytotrophoblasts.